

WHAT IS CLAIMED IS:

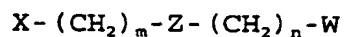
1. A method for preparing a crosslinked polymeric selectively hydrolyzable delivery system for an active ingredient, said active ingredient containing a hydroxyl, CO₂H, amino, mercapto, or enolizable carbonyl moiety; said method comprising the steps of:
 - (a) selecting (i) the active ingredient, (ii) a linker, and (iii) a crosslinked polymer;
 - (b) forming a combination of (i) and (ii) or (ii) and (iii) by, respectively, attaching the active ingredient to a linker through a hydrolyzable covalent bond formed with the hydroxyl, CO₂H, amino, mercapto, or enolizable carbonyl moiety of the active ingredient to form an ester, carboxylic acid anhydride, amide, thioester, or enol ester; or forming a linker-polymer covalent bond selected from the group consisting of a nitrogen-carbon bond, an oxygen-carbon bond, a sulfur-carbon bond, and a phosphorus-carbon bond between the linker and a portion of subunits of the crosslinked polymer; and
 - (c) forming the delivery system by combining the combination of (i) and (ii) with the crosslinked polymer or the combination of (ii) and (iii) with the active ingredient by, respectively, forming the linker-polymer covalent bond between the combination of (i) and (ii) and a portion of subunits of the crosslinked polystyrene polymer or attaching the active ingredient to the combination of (ii) and (iii) through the hydrolyzable covalent bond.
2. The method of claim 1 wherein the hydrolyzable covalent bond is formed with a hydroxyl or a derivatized carboxylic acid substituent on the linker.

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3. The method of claim 2 wherein the crosslinked polymer is chosen from the group consisting of poly[(4-halomethyl)styrene], poly[(3-halomethyl)styrene], mixtures of poly[(4-halomethyl)styrene] and poly[(3-halomethyl)styrene], poly[(4-dialkylaminomethyl)styrene], poly[(3-dialkylaminomethyl)styrene], and mixtures of poly[(4-dialkylaminomethyl)styrene] and poly[(3-dialkylaminomethyl)styrene].

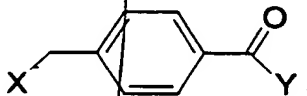
4. The method of claim 3 wherein the covalent nitrogen-carbon bond between the linker and a portion of subunits of the crosslinked polymer is formed by a reaction between a tertiary amine and a halomethyl moiety.

5. The method of claim 4 wherein the linker has the structure



wherein X is halo or dialkylamino; W is OH or COY, wherein Y is halo, hydroxy, alkoxy, aryloxy, aryloxy substituted by an electron-withdrawing group, alkanoyloxy, or aroyloxy; m is an integer from 0 to 2, inclusive; n is an integer from 0 to 2, inclusive; and Z is a divalent aryl, cycloalkyl, alkyl, alkenyl, or alkynyl group.

6. The method of claim 5 wherein the linker is



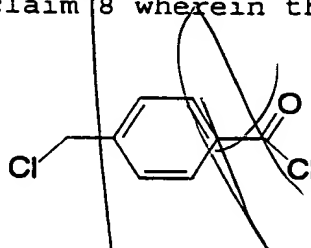
wherein X and Y are as previously defined.

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7. The method of claim 6 wherein the cross-linked polymer is poly[(4-dimethylaminomethyl)styrene], poly[(3-dimethylaminomethyl)styrene], or a mixture thereof.

8. The method of claim 7 further comprising the step of forming a quaternary salt on another portion of the styrenic subunits of the crosslinked polystyrene polymer.

9. The method of claim 8 wherein the linker is

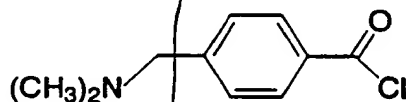


10. The method of claim 9 wherein the covalent bond through which the active ingredient is attached is formed with a hydroxyl moiety on the active ingredient.

11. The method of claim 5 wherein the cross-linked polymer is poly[(4-chloromethyl)styrene], poly[(3-chloromethyl)styrene], or a mixture thereof.

12. The method of claim 11 further comprising the step of forming a quaternary salt on another portion of the styrenic subunits of the crosslinked polystyrene polymer.

13. The method of claim 12 wherein the linker is



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14. The method of claim 13 wherein the covalent bond through which the active ingredient is attached is formed with a hydroxyl moiety on the active ingredient.

15. A delivery system comprising: an active ingredient covalently bonded to a linker through a hydrolyzable covalent bond formed with a hydroxyl, CO₂H, amino, mercapto, or enolizable carbonyl moiety of the active ingredient to produce, respectively, an ester, carboxylic acid anhydride, amide, thioester, or enol ester; said linker being covalently bonded to a portion of subunits of a crosslinked polymer through a linker-polymer covalent bond selected from the group consisting of a nitrogen-carbon bond, an oxygen-carbon bond, a sulfur-carbon bond, and a phosphorus-carbon bond.

16. The delivery system of claim 15 wherein the crosslinked polymer is selected from the group consisting of poly[(4-dialkylaminomethyl)styrene], poly[(3-dialkylaminomethyl)styrene], and mixtures of poly[(4-dialkylaminomethyl)styrene] and poly[(3-dialkylaminomethyl)styrene].

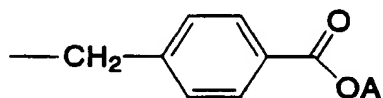
17. The delivery system of claim 16 wherein the cross-linked polymer is poly[(4-dimethylaminomethyl)styrene], poly[(3-dimethylaminomethyl)styrene], or a mixture thereof.

18. The delivery system of claim 17 wherein substantially all styrenic subunits of the crosslinked polystyrene polymer not bonded to the linker are substituted by quaternary ammonium salt moieties.

19. The delivery system of claim 18 wherein the active ingredient and the linker form a substituent on a 4-

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dimethylaminomethyl moiety or a 3-dimethylaminomethyl moiety having a structure represented by



wherein OA is the covalently bonded active ingredient.